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ABSTRACT

This report discusses the increase in college tuition and related fees at 4-year public colleges and universities from school year 1980-81 through 1994-95 and schools' expenditures over the same period. The report also discusses variations in tuition charges among states, factors contributing to increased school expenditures, and initiatives undertaken to help lower student costs. Principal findings include: (1) tuition during this period increased 234 percent whereas median household incomes have risen 82 percent and the Consumer Price Index 74 percent; (2) the two factors most responsible for tuition increases were the rise in schools' expenditures and schools' greater dependency on tuition as a revenue source; (3) schools' expenditures increased 121 percent over this period; (4) the share of schools' revenue provided by tuition rose from 16 to 23 percent and the share of revenue provided by state appropriations declined by 14 percentage points; and (5) states average tuition charges for in-state students varied from a low of $1,524 to a high of $5,521 in 1994-95. Colleges have undertaken a variety of initiatives to deal with students' increasing financial burdens including holding down tuition increases, making paying for college easier, and streamlining students' progress to graduation. (Contains a list of 8 related products from the General Accounting Office.) Contains 24 references. (MAH)

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United States General Accounting Office

GAO

Report to Congressional Requesters

August 1996

HIGHER EDUCATION

Tuition Increasing Faster Than Household Income and Public Colleges' Costs

ED 399 847

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United States
General Accounting Office
Washington, D.C. 20548

Health, Education, and
Human Services Division

B-271081

August 15, 1996

Congressional Requesters

As you requested, we have studied the history of increases in college and university tuition and other related postsecondary education costs (names of requesters are listed at the end of this letter). Our report discusses the increase in college tuition and related fees at 4-year public colleges and universities from school year 1980-81 through 1994-95 and schools' expenditures over the same period. The report also discusses variations in tuition charges among states in school year 1995-96 and initiatives that some states and colleges have undertaken to hold down tuition increases, make paying for college easier, and streamline processes to help keep total charges lower.

We are sending copies of this report to the Secretary of Education, appropriate congressional committees, and other interested parties. If you have any questions about this report, please call me at (202) 512-7014. Other major contributors are listed in appendix III.

Carlotta C. Joyner
Director, Education and
Employment Issues

List of Requesters

The Honorable Richard M. Burr
The Honorable Stephen E. Buyer
The Honorable Chaka Fattah
The Honorable Martin Frost
The Honorable Gene Green
The Honorable Peter Hoekstra
The Honorable Andrew Jacobs, Jr.
The Honorable Tim Johnson
The Honorable Marcy Kaptur
The Honorable Sue W. Kelly
The Honorable Scott L. Klug
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The Honorable William J. Martini
The Honorable Andrea H. Seastrand
The Honorable Christopher Shays
The Honorable Nick Smith
The Honorable Robert A. Underwood
The Honorable Gerald B.H. Solomon
The Honorable Dave Weldon
The Honorable Dick Zimmer
House of Representatives

The Honorable Carol Moseley-Braun
United States Senate

Executive Summary

Purpose

Paying for a college education, even at public 4-year colleges and universities, now ranks as one of the most costly investments for American families. A 1995 survey of college freshmen found that concern about college affordability was the highest it has been in the last 30 years. The escalation in college tuition (including related fees) has affected not only students and their parents, but also American taxpayers at both the federal and state levels. Federally supported student financial aid increased from $11.8 billion in fiscal year 1980 to $31.4 billion in 1993. During the same period, annual state funding for higher education grew from $19.2 billion to $39.8 billion.

Even with these funding increases, some experts in the higher education community are concerned that the nation's colleges and universities are rapidly approaching or are already in a fiscal crisis. For example, many schools have a substantial backlog of deferred physical maintenance that may be getting harder to ignore. Others may need to expand their capacity or limit enrollment to deal with projected increases in student demand. State legislatures, on the other hand, are increasingly appropriating funds to meet other social needs, such as Medicaid, prisons, and elementary and secondary education programs, and are not inclined to increase state taxes to meet public colleges' and universities' financial needs.

Twenty-three Members of Congress asked GAO for information on (1) the extent to which tuition levels have changed relative to increases in consumer prices and families' ability to pay; (2) the extent to which schools' increased expenditures for instruction, administration, research, and other expenditures have contributed to the increase in schools' overall expenditures; (3) how tuition levels at public colleges and universities vary among the states and what factors help account for the differences; and (4) the kinds of actions states and institutions have taken to deal with affordability issues. To address these objectives, GAO reviewed the literature; interviewed various school officials and other people knowledgeable about college finance and policy issues; and analyzed data on school revenues, expenditures, and tuition levels. For purposes of this report, GAO focused its study on schools that most students attend—public 4-year colleges and universities.

Background

Of the approximately 9 million students enrolled in 4-year colleges and universities each year, about two-thirds attend state-supported schools. Their education is supported partly by tax dollars and partly by tuition. In school year 1993-94, the states' appropriations to public colleges and

universities provided about 42 percent of revenues; the students' share was about 23 percent; and the remainder came from other sources, such as endowments, grants, gifts, and contracts.

Results in Brief

From school year 1980-81 through 1994-95, tuition at 4-year public colleges and universities increased 234 percent. In contrast, median household income, a measure of families' ability to pay for tuition, rose 82 percent. This increase in tuition also substantially exceeded the 74-percent increase in the cost of consumer goods—as measured by the Consumer Price Index (CPI)—that families use their incomes to purchase.

The two factors most responsible for the increase in tuition were the rise in schools' expenditures and schools' greater dependency on tuition as a source of revenue. Schools' expenditures per student increased 121 percent from school year 1980-81 through 1993-94, half again as much as inflation. Increases in instruction, administration, and research expenditures accounted for more than two-thirds of this increase. The increased spending for instruction was driven largely by increases in faculty salaries, which rose 97 percent during the period. Also during this period, the share of schools' revenues provided by tuition rose from 16 percent to 23 percent, as the share of revenue provided by state appropriations declined by 14 percentage points.

Moving from nationwide statistics, GAO found wide variation in tuition charges among states in school year 1995-96. Although the nationwide average tuition for in-state students at 4-year public schools was $2,865, the state averages ranged from $1,524 to $5,521. The explanation, in part, for these variations is states' level of support (that is, how much money per student a state appropriates for its 4-year public schools).

To deal with students' increasing financial burden, colleges have undertaken a variety of initiatives, including holding down tuition increases, making paying for college easier, and streamlining students' progress to graduation to keep their total charges lower. Because some of these efforts are in the early stages of planning and implementation, little has been done to analyze or evaluate their effectiveness.

Principal Findings

College Has Become Less Affordable

From school year 1980-81 through 1994-95, tuition at 4-year public colleges and universities has risen nearly three times as much as median household income, making attendance less affordable for many students. The increase in tuition is primarily related to two factors: schools' expenditures have risen substantially in the last 15 years, and states' funding of higher education has not kept pace with these rising expenditures.

Moreover, increases in grant aid—primarily federal Pell grants—have not kept up with tuition increases at 4-year public colleges and universities. As a result, in addition to paying higher prices, college students and their parents are having to rely more heavily on loans and personal finances. For example, in fiscal year 1980, the average student loan was $518; in fiscal year 1995, it rose to $2,417, an increase of 367 percent.

Tuition Has Provided a Larger Share of Schools' Revenues as Schools' Expenditures Have Increased

From school year 1980-81 through 1993-94, 4-year public colleges and universities increased their spending by 121 percent—an increase of about $7,900 per student. During the same period, the portion of schools' revenues provided by tuition increased from 16 percent to 23 percent.

The primary factor fueling the growth in schools' expenditures was an increase in schools' largest cost component—instruction expenditures. Faculty salaries represented most of the 106-percent increase in instruction expenditures during the period. Some of the cost growth, according to existing research, was the result of schools' competition with one another and with industry for high-quality scholars and researchers. In addition, average salaries have increased as schools' faculties have grown older and a greater part of this workforce has reached the full professor level. Other instruction expenditures contributing to the increase in this cost component were attributed mostly to growth in spending for faculty fringe benefits and instructional supplies and equipment.

A second major factor driving the increase in school expenditures was the 131-percent increase for administrative activities. Although available data were insufficient to determine what caused administrative expenditures to increase, researchers suggest a number of reasons, including an increase in the costs of complying with federal laws, such as hazardous waste

disposal laws and title IX of the Education Amendments of 1972, which prohibits discrimination on the basis of sex in educational programs or activities (including collegiate sports).

Schools' expenditures for research increased 157 percent during the 14-year period. Some analysts maintain that the funds schools received for research grants and contracts were insufficient to cover their research expenditures, especially indirect costs, and that state appropriations or tuition were used to subsidize a portion of research costs. Other analysts maintain that increased expenditures for research did not contribute to increases in tuition and state appropriations. Nationwide data on colleges' research expenditures and revenues were not sufficient to determine the validity of either position.

Another important factor contributing to the rise in tuition from school year 1980-81 through 1993-94 was the increase in the portion of schools' revenues paid for by tuition, which rose from 16 percent to 23 percent. This occurred, in part, because state appropriations fell from 56 percent to 42 percent of schools' revenues, and increased school revenue from other funding sources financed only about half of this decline. Had the portion of school revenues from each funding source remained constant at the 1980-81 level, tuition could have been 30 percent lower than it was at the end of this period.

Tuition Varies Widely Among States

Tuition levels at the nation's 4-year public colleges and universities for undergraduate in-state students ranged from $1,524 to $5,521 in school year 1995-96. The nationwide average was $2,865. In general, schools with the highest average tuitions were in the northeastern states, and schools with the lowest average tuitions were in states in the South and the West. GAO's analysis showed that four factors were associated with 78 percent of the variation in average state tuition levels, although these factors are not necessarily causes of tuition being high or low. Specifically, states with lower tuitions generally had relatively low state and local tax rates, low median household incomes, low college expenditures per student, and relatively high per capita state appropriations for higher education.

Varying Approaches Taken to Easing the Financial Burden

States and 4-year public schools are taking or planning a variety of actions to address the financial burden of paying for college. Some of these initiatives focus directly on charges students incur and on alternative ways of paying for them. For example, some states and schools are limiting

tuition charges, offering tuition prepayment and other savings plans, or arranging for tuition payments to be spread over the school year.

Other initiatives address students' costs indirectly by attempting to expedite students' progress towards completing their degree requirements. These approaches commonly focus on ways to facilitate students' transferring credits from one school to another (including credits for college-level courses taken by high school students); reducing the number of credits that programs require for a degree; improving academic counseling to help students both avoid unnecessary delays in choosing a major and more efficiently sequence their courses; and advising high school juniors of courses they should take during their senior year to become better prepared for college-level work.

Recommendations

GAO is making no recommendations in this report.

Agency Comments

The Department of Education reviewed a draft of this report and had no comments.

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Abbreviations

AP	advanced placement
CPI	Consumer Price Index
FTE	full-time-equivalent
HEPI	Higher Education Price Index
IB	International Baccalaureate
IPEDS	Integrated Postsecondary Education Data System
PASS	Proficiency-Based Admissions Standard System
SHEEO	State Higher Education Executive Officers Association
SUNY	State University of New York

Introduction

Average tuition[1] for a resident undergraduate student to attend a public 4-year college or university (referred to throughout this report as a "public college") rose from $804 per year in school year 1980-81 to $2,689 in 1994-95, an increase of 234 percent. During approximately the same period, the median household income rose 82 percent. This was a reversal from the 1970s, when the cumulative percentage increase in the Consumer Price Index (CPI) exceeded that of the percentage increase in college tuition.

The rising cost of college continues to be an issue of widespread concern. Studies and polls show fears about being able to afford a college education—and, in particular, about the debt that students and their families must often incur to pay for college. A 1995 survey of college freshmen, for example, found that 71 percent of the students surveyed expressed concern that they might not be able to pay for the schooling required for their intended careers.[2]

Research indicates that the reasons for this concern show no sign of abating in the near future. In a 1995 survey, a majority of the heads of state legislative higher education committees said that their states' current funding level for public colleges was inadequate to meet higher education's future needs and that legislatures were unlikely to increase funding for higher education in the next 3 to 5 years.[3] Only 9 percent said that increasing state taxes was a likely option for providing more funds for state colleges. Given this, the states' continuing demands for social services, and limited state revenue, states may shift even more of the college cost burden to students and their parents.

Although college students may be paying significantly more for their education than their predecessors did 10 or 15 years ago, the earnings advantage of college graduates over those not getting college degrees has also grown substantially. According to a recent analysis of U.S. Census Bureau data by an economist with the University of Chicago, a graduated college student in 1980 earned about 43 percent more per hour than a

[1]Throughout this report, "tuition" refers to in-state (state resident), full-time undergraduate tuition and required fees; it does not include charges for room and board, which may be significant at some schools.

[2]Alexander W. Astin, William S. Korn, Kathryn M. Mahoney, and Linda J. Sax, The American Freshman: National Norms for Fall 1995 (Los Angeles: Cooperative Institutional Research Program, American Council on Education, and University of California, 1995).

[3]Sandra S. Ruppert, The Politics of Remedy: State Legislative Views on Higher Education (Washington, D.C.: National Education Association, 1996).

person with a high school diploma. By 1994, this earnings advantage had increased to 73 percent.

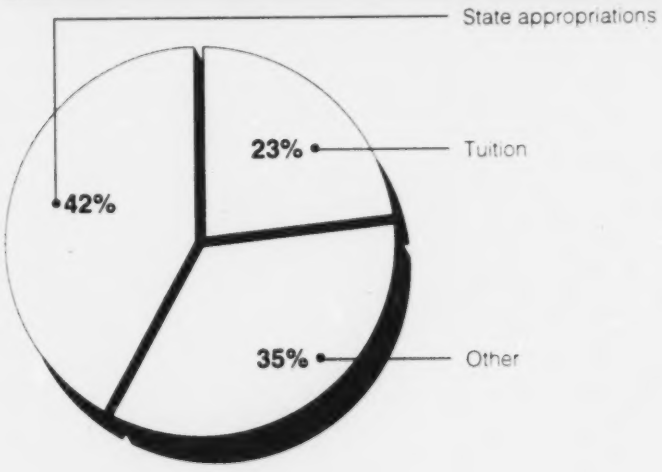
Public Higher Education: Many Students, Multiple Funding Sources

State-supported 4-year colleges and universities are a substantial public enterprise. During the 1993-94 school year, for example, they served about 5.9 million students and had expenditures totaling about $94 billion. Federal student financial aid support that year for all schools totaled about $31.4 billion, including about $12 billion in grants and federally guaranteed loans for students enrolled in public colleges. While private colleges and universities also have a major role in American higher education, public colleges have the lion's share of students—about two-thirds of the students in 4-year schools.

Although tuition and related fees may be the most visible cost of higher education to students, tuition pays for only about one-fourth of educational and general expenditures at public colleges. On average, the nation's public colleges' expenditures totaled over $14,000 per student during the 1993-94 school year.[4] Tuition funded about 23 percent of this amount (see fig. 1.1). Almost twice as much, 42 percent, came from state general funds. The remainder came from a variety of other sources, such as endowments, grants, gifts, and contracts.

[4]At the time we conducted our work, the 1993-94 school year was the most recent year for which comparative information on college costs was available.

Figure 1.1: Sources of Revenue for 4-Year Public Colleges, School Year 1993-94



Objectives, Scope, and Methodology

This study, undertaken at the request of 23 Members of Congress, provides information that should be of help in understanding rising tuition levels and the increasing costs of operating public colleges as the Congress begins its deliberations on the reauthorization of the Higher Education Act of 1965, as amended. Although private college tuition has also risen dramatically and some of these schools have tuition exceeding $20,000 per year, we focused our review on public colleges because a majority of students attend these schools. As a result of discussions with requesters' staffs, we focused our work on these questions:

- To what extent have tuition levels at public colleges changed over time relative to increases in consumer prices and families' ability to pay?
- To what extent have instruction, administration, research, and other expenditures each contributed to the schools' rising costs?
- How do tuition levels vary among states, and what factors help explain the differences?
- What kinds of actions have states and public colleges taken to deal with affordability issues?

Our analysis of tuition, college and university expenditures, and states' efforts to make college more affordable is based on data maintained by the U.S. Department of Education and other sources, contacts with state and school officials, and discussions with representatives of higher education

organizations and individuals familiar with higher education issues. Appendix I describes our objectives, scope, and methodology in more detail.

We provided the Department of Education a draft copy of this report. The Department had no comments.

Our work was conducted from October 1995 to July 1996 in accordance with generally accepted government auditing standards.

Chapter 2

College Has Become Less Affordable Since 1980

During the last 15 years, tuition at public colleges has risen almost three times more than household incomes have. This rise reflects two main trends: public college expenditures have generally risen more than inflation, and states have paid a lower portion of expenditures with appropriated funds. During this same period, growth in grant aid to students has not matched the increase in tuition. As a result of these factors, many students and their families have borrowed more to finance the cost of college.

Tuition Has Risen Nearly Three Times More Than Household Income

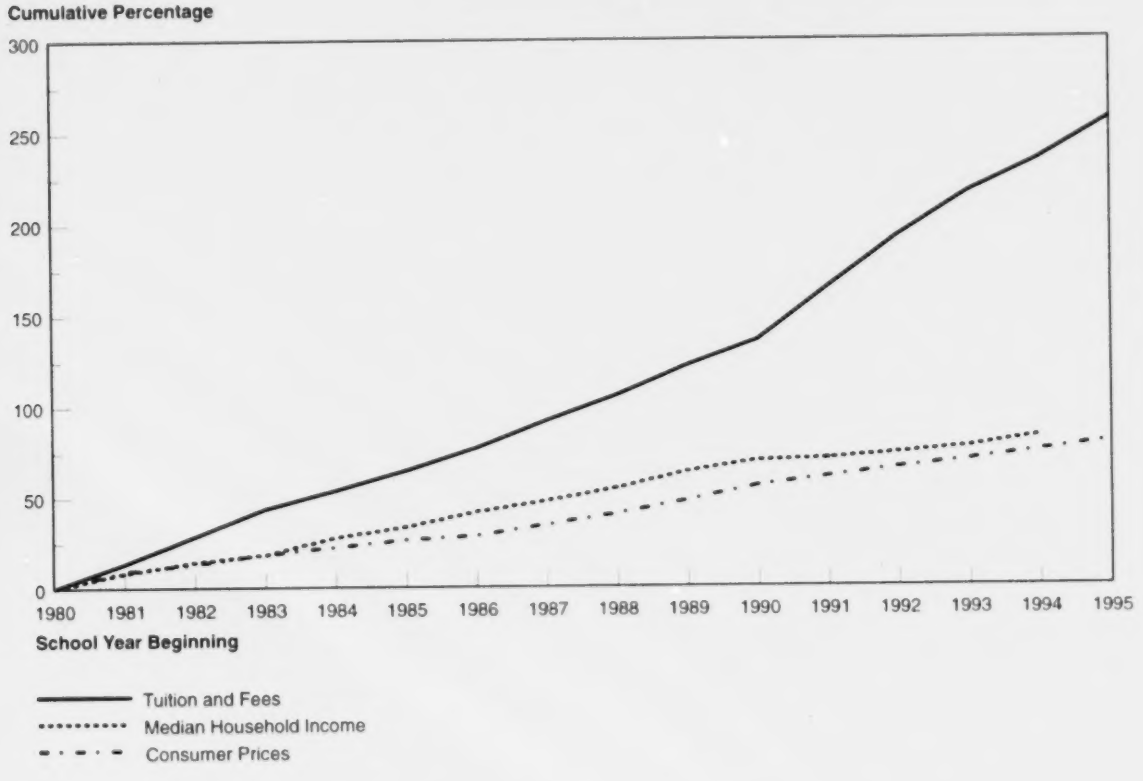
From school year 1980-81 through 1994-95, increases in tuition at public colleges considerably outpaced increases in both median household income and inflation.[5] From school year 1980-81 through 1994-95, the average tuition for full-time, in-state students increased from $804 per year to $2,689, or 234 percent. During approximately the same period, median household income rose 82 percent, from $17,710 to $32,264,[6] and the cost of living—as measured by CPI—rose 74 percent. Computed on an annualized basis, the rates of increase were about 9.0 percent for tuition, 4.4 percent for median household income, and 4.0 percent for CPI.

Figure 2.1 compares the cumulative percentage increase in tuition, median household income, and consumer prices over the 15-year period beginning with school year 1980-81. As figure 2.1 shows, the cumulative percentage increase in tuition was almost 3 times more than the percentage increases in household income and consumer prices. The rate of increase has been especially pronounced since 1990.

[5]In our analysis of students' costs, we focused on tuition, which included related fees. We excluded certain other costs, which can be substantial, that students incur while attending college, such as room and board, books and supplies, and transportation. Data on these kinds of costs were not consistently included in the readily available databases we used in our analysis.

[6]These median household income figures are for calendar years 1980 and 1994, respectively.

Figure 2.1: Comparative Increases in Tuition, Median Household Income, and Consumer Prices, School Years 1980-81 to 1994-95



Note: Median household income figures are for calendar years. A median household income figure was not available for 1995.

As a result of these increases, paying for tuition now takes about twice the proportion of household income as it did in 1980. As a proportion of median household income, average tuition cost has grown from 4.5 percent in school year 1980-81 to 8.3 percent in 1994-95.

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As Schools' Expenditures Have Increased, Tuition Has Provided a Larger Share of Schools' Revenues

The two factors most responsible for the 234-percent increase in tuition from school year 1980-81 to 1993-94 were (1) an increase of 121 percent in schools' expenditures and (2) an increase from 16 percent to 23 percent in the portion of schools' funding provided by tuition.

School Expenditures Have Increased Significantly

School expenditures have significantly outpaced inflation. In school year 1980-81, the nation's public colleges spent an average of $6,540 per full-time-equivalent (FTE) student.[7] By 1993-94 (the last school year for which comparative data were available), FTE expenditures had grown to $14,483, an increase of 121 percent. During the same period, CPI rose 69 percent.

Possible reasons, other than inflation, for this rise in schools' expenditures are many and varied. Chapter 3 further discusses schools' expenditures, and chapter 4 discusses the correlation between states' average costs and state tuition levels.

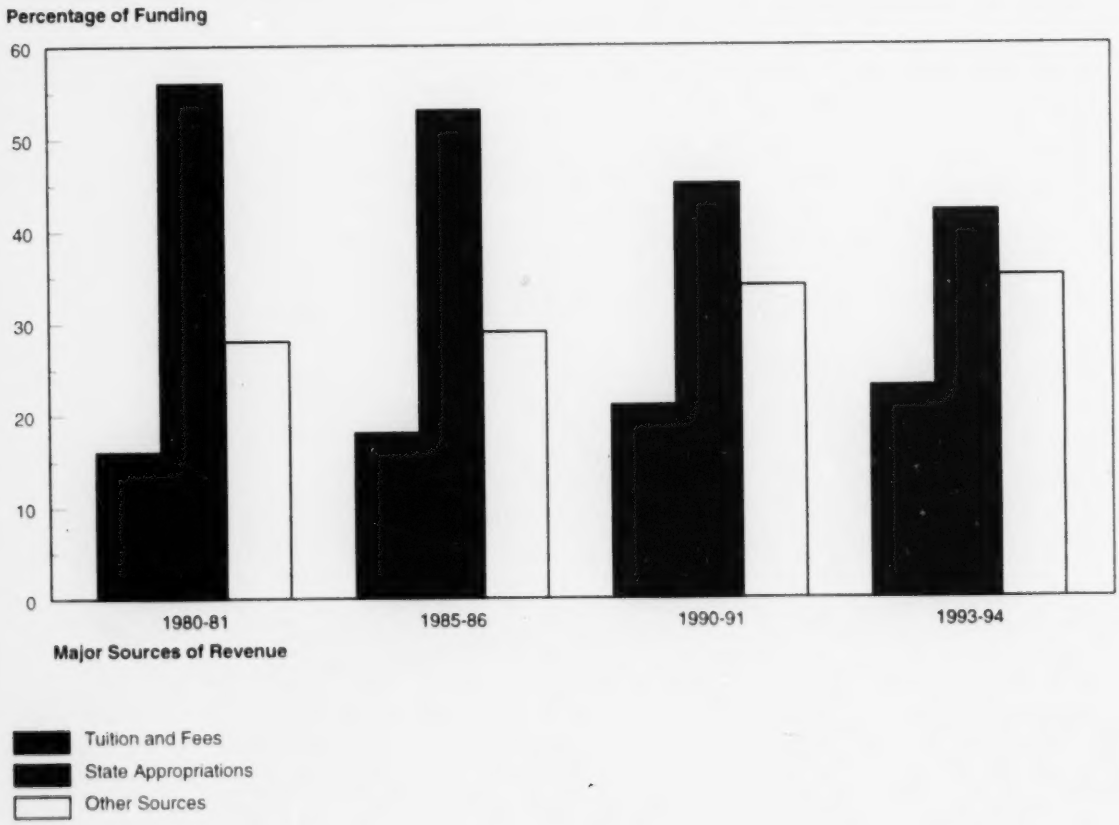
Tuition Has Provided a Larger Share of Public Colleges' Revenue

From school year 1980-81 through 1993-94, tuition funded a progressively larger portion and state appropriations funded a diminishing portion of public colleges' revenues. Even though state appropriations increased 96 percent during the period, schools' revenues from tuition and other sources rose more rapidly. Figure 2.2 shows how funding sources were split among tuition, state appropriations, and other sources of funding[8] during 4 school years: 1980-81, 1985-86, 1990-91, and 1993-94.

[7]Throughout chapter 2, the cost data include graduate students as well as undergraduate students. The available databases did not permit the two to be separated.

[8]Other sources of funding include research and other grants and contracts, sales of educational services, endowment income, and local and federal appropriations.

Figure 2.2: Comparison of Revenue From Major Funding Sources for 4-Year Public Colleges, School Years 1980-81, 1985-86, 1990-91, and 1993-94



Note: Not included are Pell grant receipts from the federal government, auxiliary enterprise, independent operation, and hospital revenue.

As a proportion of schools' revenues, state appropriations fell from 56 percent in school year 1980-81 to 42 percent in 1993-94. During this same period, the portion of school revenue provided by tuition rose from

16 percent to 23 percent, and the portion provided by other funding sources rose from 28 percent to 35 percent. Had the portion of schools' revenue provided by each funding source remained at 1980-81 levels, tuition levels would have been 30 percent lower than they actually were at the end of the period because tuition would have provided 30 percent less of school revenues (that is, 16 percent instead of 23 percent).

One factor researchers say affects the level of state support is the competition for state funds from other state programs, most notably elementary and secondary education, health care, prisons, and welfare. Spending on these four areas is largely mandated by federal and state laws, court orders, and voter initiatives. Higher education funding is considered discretionary spending and is, therefore, more vulnerable to funding reductions than spending for these items.

This vulnerability has been particularly evident when economic downturns have put stress on state finances. Tuition increases since school year 1980-81 have generally been the greatest when national economic conditions were poor and the states were more limited in their ability to generate tax revenues. For example, following the 1981-82 and 1990-91 recessions, tuition at public colleges increased annually by 8 percentage points more than consumer prices, as measured by CPI. In contrast, in better economic times, such as the mid- and late-1980s, states increased their financial support for higher education, and annual tuition increases tended to exceed consumer price increases by 2.4 to 5 percentage points.

Grant Aid to Students Has Not Kept Pace, Causing Greater Reliance on Loans

Grant aid available to students and their families has not kept pace with tuition increases. One of the largest sources of this aid is federal Pell grants, which are awarded to students who meet certain tests of financial need. In school year 1994-95, the average Pell grant per FTE student was $409, an increase of 72 percent over 1980-81.[9] However, tuition rose more than three times as fast during the same period.

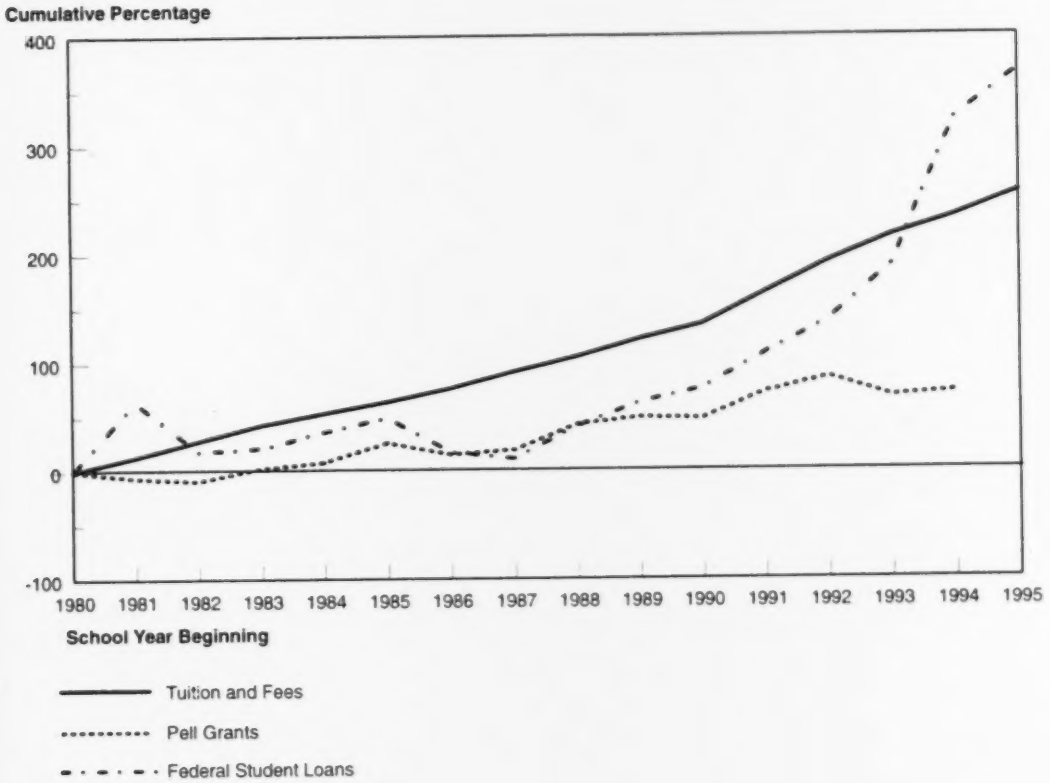
To pay for rapidly rising tuition and other college expenses, students and parents have increasingly relied on loans to finance college educations. The volume of loans provided to students at public colleges by the Department of Education's major student loan programs rose 435 percent during the 15-year period, from an estimated $2.2 billion in fiscal year 1980 to an estimated $11.5 billion in fiscal year 1995. While part of the increase resulted because more students were taking out loans in 1994-95 than in

[9]The average Pell grant per FTE student at 4-year public colleges was $1,571 in school year 1994-95.

1980-81, much of it was the result of the increased size of loans. The annual average student loan at 4-year public schools rose from $518 per FTE student in fiscal year 1980 to $2,417 in fiscal year 1995, an increase of 367 percent. But since not all students had student loans, the average loan amount was higher—$3,282—and some borrowers received more than one loan.

Figure 2.3 shows the relationship between the average amount of federal student loans, Pell grants per FTE student, and tuition levels at public colleges in school years 1980-81 through 1995-96. Using 1980-81 as a base year, average federal student loan amounts showed larger percentage increases than tuition beginning in 1986, while the rate of Pell grant increases lagged behind both in recent years.

Figure 2.3: Comparison of Increases in Annual Tuition and Loan and Grant Amounts at 4-Year Public Colleges, School Years 1980-81 Through 1995-96



Note: A figure for Pell grants was not available for 1995-96. Federal student loan figures are for federal fiscal years, not school years.

Factors Contributing to Increases in School Expenditures

From school year 1980-81 through 1993-94, public colleges increased their spending on a per-student basis by 121 percent, due largely to a 90-percent increase in the amount spent on the goods and services they purchased, such as computer expenditures and instructors' salaries.[10] The three types of expenditures that accounted for over two-thirds of all college expenditures in 1980-81—instruction, administration, and research—also accounted for over two-thirds of the increase in expenditures during the 1980-81 to 1993-94 period.

Although state appropriations and tuition payments are the primary funding sources for most public colleges' instruction and administrative expenditures, research expenditures are largely funded by government and private grants and contracts. However, the degree to which state appropriations and tuition receipts are used to fund research cannot be readily determined on a national level with existing data, and the influence of these expenditures on tuition levels is the subject of much debate.

Amount Schools Spent on Goods and Services Increased More Than Inflation

From school year 1980-81 through 1993-94, public colleges increased their expenditures from about $6,500 per student to nearly $14,500, or by about 121 percent. This increase was about 30 to 50 percentage points higher than inflation, depending on the price index used.

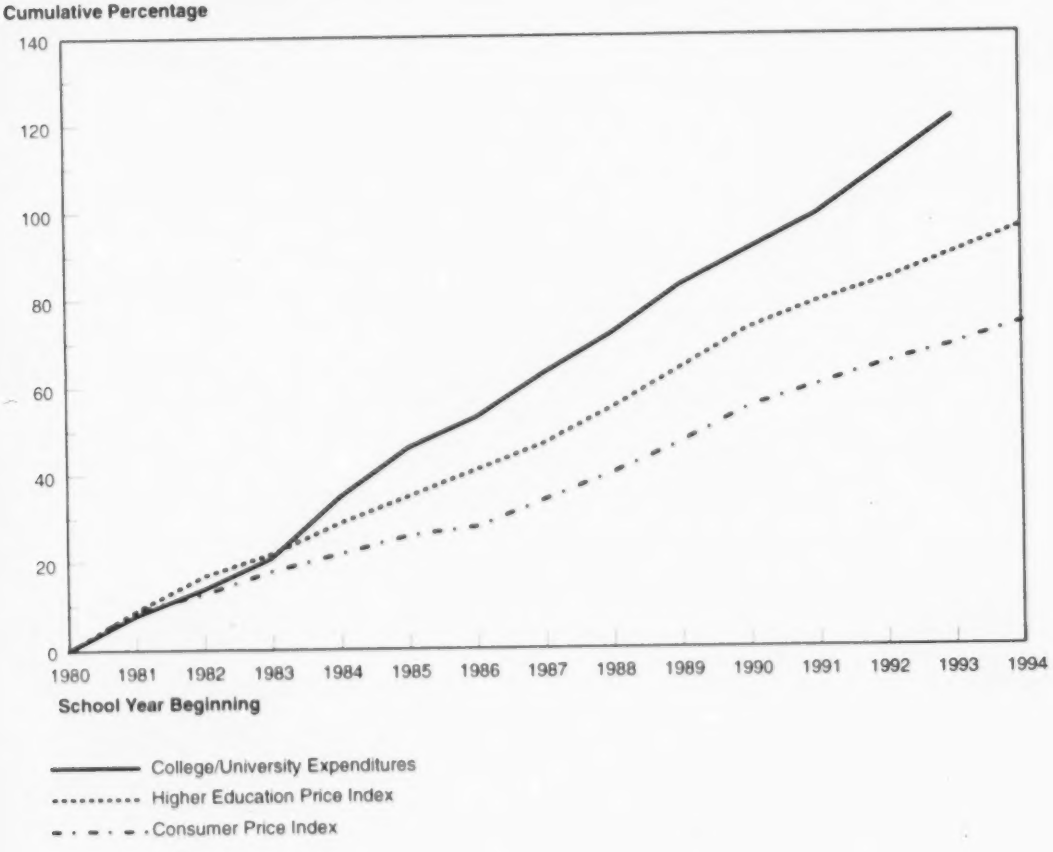
Schools' expenditures increased 52 percentage points more than the 69-percent increase in CPI during the 1980-81 to 1993-94 period. One reason why schools' expenditures rose more than CPI is that schools spend their funds on a different group of components than is measured by CPI. Whereas CPI measures increases in the prices of such items as food, clothing, housing, and health care, schools spend their monies on such items as faculty and administrator salaries, fringe benefits, and library materials.

Some researchers believe a better measure of school cost increases is the Higher Education Price Index (HEPI)—an index specifically designed to measure changes in the prices of goods and services commonly purchased by higher education institutions. Items that HEPI measures include faculty and administrators' salaries, fringe benefits, communication and data processing services, supplies and materials, library acquisitions, and utilities.

[10]Our calculations were based on FTE students, to whom we refer as "students" in this chapter.

The HEPI measurement includes 2-year and 4-year public and private colleges and universities and, therefore, the expenditures of public colleges may have increased somewhat more or less than the expenditures for all schools. Nonetheless, many researchers believe that HEPI is a better measurement of the increases in prices of the types of goods and services purchased by public colleges than is CPI, which measures the increase in a market basket of consumer goods. As shown in figure 3.1, the increases in HEPI consistently outpaced increases in CPI from school year 1980-81 through 1993-94, with HEPI rising 90 percent compared with CPI's 69-percent increase. Also, the HEPI increase is equivalent to about three-fourths of the 121-percent increase in schools' expenditures during the period.

Figure 3.1: Comparison of Increases in Per-Student Expenditures at Public Colleges With Increases in HEPI and CPI, School Years 1980-81 Through 1993-94



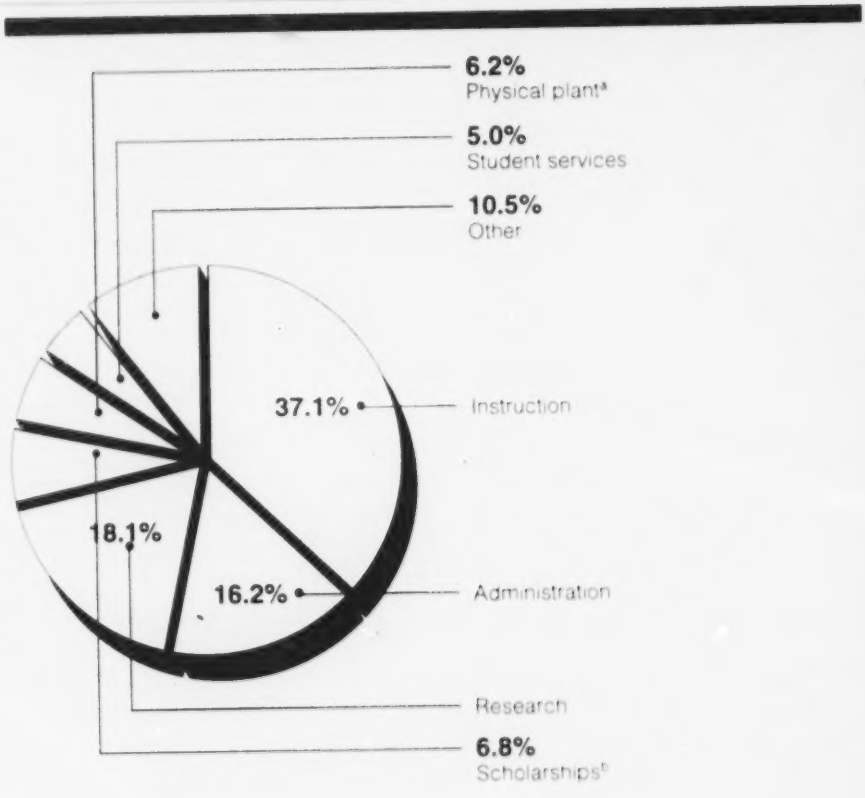
The 31-percentage point difference between the increase in public colleges' expenditures and the increase in HEPI can be attributed to either an increase in the volume of goods and services schools purchased or a more expensive mix of goods and services purchased—for example, more

computers and fewer adding machines. While about three-fourths of schools' overall increases in expenditures were due to higher prices paid as reflected in HEPI, data were insufficient to analyze the reasons for the increases in the remaining expenditures.

Three Major Components Had Largest Impact on Increasing School Expenditures

To gain a better understanding of why increases in school expenditures have outpaced increases in inflation, we analyzed changes in the individual components of schools' expenditures. In general, we found that three components—instruction, administration, and research expenditures—were the most influential in driving up school expenditures (see fig. 3.2).

Figure 3.2: Components' Shares of the $7,984 Increase in 4-Year Public Colleges' Costs Per FTE Student, School Year 1980-81 to 1993-94



[a]Includes plant operations and maintenance.

[b]Includes scholarships and fellowships, but not Pell grants.

Increase in Instruction Expenditures Was a Major Factor in Growth of School Expenditures

In terms of expenditures per student, school spending for instruction was the largest single factor contributing to the increase in school expenditures from school year 1980-81 through 1993-94. During this period, public colleges increased their spending from $2,719 to $5,669 per student—an increase of $2,950, or 108 percent. The largest component of instructional expenditures was the increase in salaries and wages.[11] The average salary for faculty at public colleges increased by $23,646 (97 percent), from $24,373 in 1980-81 to $48,019 in 1993-94.

[11]In 1993-94, $3,994 (about 70 percent) of the $5,669 average per-student instruction expenditures were for salaries and wages.

According to the literature we reviewed, average faculty salaries have increased, in part, because schools have been competing with one another and industry for high-quality scholars and researchers. The average salary has also increased because the faculty workforce has been aging. A greater proportion of faculty are at the full professor level, and this has resulted in a gradual increase in the average salary over the last 10 to 15 years. However, some higher education policy analysts have pointed out that the increase in faculty salaries during the 1980s and 1990s has merely returned salary levels to where they were in the early 1970s, in real terms. Faculty salaries did not keep up with inflation from 1973 to 1982 and did not start to experience any real growth until 1983.

The literature we reviewed also suggested another reason for the increase in instructional costs: the decline in faculty productivity in terms of teaching workload. Faculty are spending less time in the classroom and more doing research and, partly as a consequence, colleges and universities are hiring more faculty. This additional hiring drives up instructional costs, which in turn results in higher tuition. Some believe the underlying cause of this phenomenon is the reward system that values research over teaching, particularly with regard to granting tenure. To address this issue, a number of states have conducted or initiated studies on faculty workload and productivity. To review these studies and more thoroughly evaluate this complex issue was beyond the scope of our work.

In addition to the increases in faculty salaries, other factors have contributed to the increase in instructional expenditures. For example, faculty fringe benefits have increased substantially—by 162 percent from 1980-81 to 1993-94. Schools are also spending more for instructional supplies and equipment. A modern science curriculum, for example, calls for the use of more sophisticated laboratory equipment, such as electron microscopes, and this equipment is more costly to purchase and maintain than the equipment used in the past.

Growth in School Administrative Expenditures Outpaced Inflation

Increased administrative expenditures was another significant factor causing school expenditures to outpace inflation from school year 1980-81 through 1993-94. During this period, these expenditures grew about 131 percent, or 41 percentage points more than HEPI increased. School administrative expenditures increased $1,284 per student, from $979 in 1980-81 to $2,263 in 1993-94.

Although the literature contains no consensus on what constitutes administrative expenditures, the Department of Education defines them as institutional and academic support expenditures, excluding expenditures for libraries.[12] Institutional support includes expenditures for such items as general administrative services, executive direction and planning, legal and fiscal operations, and public relations/development. Academic support includes expenditures for museums, galleries, audiovisual services, academic computing support, ancillary support, academic administration, personnel development, and course and curriculum development.

According to Department of Education data, approximately 56 percent of administrative expenditures in 1993-94 were for salaries and wages. Because we were unable to obtain nationwide data on the numbers of administrative personnel or their salaries for 1980-81, we could not determine how much of the increase in administrative expenditures could have been attributed to increased staff, as distinguished from higher salaries. However, the administrative and institutional services personnel component of HEPI increased by 108 percent from 1980-81 to 1993-94, which indicates that a large portion of the growth in administrative costs was likely due to an increase in salaries.

The literature we reviewed offered a number of reasons for the increase in administrative expenditures, including additional expenditures for recruiting students, expanded student financial aid programs, and administrative computing services. Another reason cited in the literature was that schools have increased their administrative budgets to ensure compliance with such federal statutes as hazardous waste disposal laws; the Equal Employment Opportunity Act; title IX of the Education Amendments of 1972 (which prohibits discrimination on the basis of sex in educational programs or activities, including collegiate sports for women); and the Americans with Disabilities Act of 1990 (which prohibits discrimination on the basis of disability in public services, programs, or activities).

Research Expenditures Rose Substantially, but Their Effect on Tuition Is Unclear

Research expenditures at public colleges increased $1,439 per student (157 percent), from $914 in school year 1980-81 to $2,353 in 1993-94. It is unclear whether the growth in research expenditures contributed to the increase in net college research expenditures (research expenditures that exceeded amounts received from research grants and contracts). In any

[12]Some of the literature we reviewed also includes student services as a part of administrative expenditures. For our calculations, we used the Department's definition.

case, whether increased net research expenditures contributed to the increase in tuition prices is a matter of debate within the higher education community. We could not determine the extent that net college research expenditures may have changed on a nationwide basis because such information was not readily available from the Department of Education.

Schools receive funds from government and private grants and contracts to pay for specific research projects. For example, federal government research contracts pay for direct costs specifically identified with a particular research project as well as for certain indirect costs for associated administrative and facilities expenses. For every dollar spent for the direct costs of colleges' research, subject to certain exclusions, the government pays an additional amount to cover its share of the colleges' indirect costs. Since 1991, schools have been limited to a 26-percent cap on federal reimbursements for certain indirect costs. Previously, the level of reimbursement for indirect costs varied among institutions, with some having overall rates greater than 60 percent.[13]

The extent to which colleges and universities use their own funds to pay for research is a matter of controversy within the higher education community. Some contend that schools are not collecting sufficient grant or contract monies to fully pay for their expenditures on research projects, especially for indirect costs, and that, therefore, tuition and state appropriations are being used to subsidize research.

Although there is anecdotal information on this issue, neither side of this controversy has presented comprehensive, factual data in support of its position. Furthermore, nationwide data collected by the Department of Education through its Integrated Postsecondary Education Data System (IPEDS) surveys are aggregated at too high a level to be useful in settling this issue.

Most Other School Expenditures Also Rose Significantly

In addition to instructional, administrative, and research expenditures, a number of other types of school expenditures have also risen faster than the rate of inflation. These expenditures include scholarships and fellowships, student services, and plant operation and maintenance. While the average dollar-per-student increases for each of these categories are relatively small, collectively they account for about one-fourth of the total per-student increase in school expenditures.

[13]We have conducted several studies on various issues regarding indirect research costs; these reports are listed at the end of this report.

Scholarships and Fellowships

Expenditures by public colleges for scholarships and fellowships (excluding Pell grants) experienced the fastest rate of growth of all expenditure items in terms of percentage increases. In school year 1980-81, schools spent $219 per student; in 1993-94, this amount had grown to $759, an increase of $541 per student, or 247 percent.

Expenditures for scholarships and fellowships include funds the school gives in the form of outright grants, trainee stipends, and tuition and fee waivers. Also included are federal grant programs for which the recipients and award amounts are determined by the school, such as Supplemental Educational Opportunity Grants and State Student Incentive Grants; monies expended for scholarships and grants from funds provided by state and local governments and private sources; and institutional funds, including matching funds for federal, state, or local grant programs. Scholarships and fellowships are like research in that, to the degree they are funded by outside revenue sources, they do not increase colleges' net expenditures. As in the case of research expenditures, we could not determine the extent that net expenditures for scholarships and fellowships may have changed on a nationwide basis, because such information was not readily available from the Department of Education.

Although these expenditures had the largest percentage increase from school year 1980-81 through 1993-94, the $541 per-student increase in spending represented only about 7 percent of the $7,944 total increase in per-student spending for the period. In addition, although these expenditures are included in our calculation of schools' expenditures, the increase in schools' net expenditures for scholarships and fellowships is reduced by the funds received from the federal government and private sources for scholarships and fellowships.

Student Services

School spending on student services more than doubled from school year 1980-81 through 1993-94. Total expenditures for student services increased from $322 per student in 1980-81 to $723 in 1993-94, an increase of $401 or 125 percent. As in the case of institutional and academic support, a significant portion (53 percent) of the expenditures for the student services function consists of salaries and wages.

Student services include funds expended for admissions, registrar activities, career guidance, counseling, financial aid administration, student health services, and any other activity that contributes to students' emotional and physical well-being and to their intellectual, cultural, and

social development outside the context of the formal instructional program.

The literature we reviewed offered a number of reasons for the growth in spending for student services. One reason given is that student demographics have been changing. A growing number of students attending college are older, and many of them attend on a part-time basis. These students tend to need more remedial services, counseling, and administrative support. Another reason offered is that students in general appear to want and expect more personal counseling, tutoring, and mentoring, all of which require more support staff and facilities.

Plant Operation and Maintenance

Expenditures for operating and maintaining physical plants include funds spent for the operation and upkeep of grounds and facilities used for general and educational purposes, utilities, fire protection, property insurance, and similar functions. School expenditures for plant operation and maintenance increased by $495 (72 percent) per student, from $684 per student in school year 1980-81 to $1,179 in 1993-94.

School expenditures for operation and maintenance grew at a slower rate than HEPI (a 72-percent increase versus a 90-percent increase) during this period. However, if the findings of a report issued in 1989 are still valid, school expenditures on plant operation and maintenance may become a much larger factor fueling tuition and cost increases in the future.[14] According to this study, the 209 institutions surveyed deferred $4 of needed maintenance for every $1 spent in 1988, and repairs and renovations considered "priority" or "urgent" totaled an estimated $20.5 billion through 1988.[15] This study was being updated at the time of our review, and an official participating in the study said that deferred maintenance had grown to about $26 billion.

Other Cost Components

Other items on which schools spend money include libraries; public service; debt service on academic and administrative buildings; monies deposited into institutional loan funds; transfers into endowment funds; and additions, renewals, and replacements of plants (land, buildings, machinery, and furniture). Institutional expenditures for these kinds of items, which we termed "other cost components" for our analysis,

[14]Sean C. Rush and Sandra L. Johnson, The Decaying American Campus: A Ticking Time Bomb (Alexandria, Va.: Association of Physical Plant Administrators of Universities and Colleges and the National Association of College and University Business Officers, 1989).

[15]The schools in this study included both public and private colleges and universities.

increased by $835 per student (119 percent), from $703 in school year 1980-81 to $1,538 in 1993-94.

Tuition at 4-Year Public Colleges Varies Widely Among States

Nationwide, average tuition for resident, undergraduate full-time students at public colleges was $2,865 for school year 1995-96, but tuition levels varied considerably by state, ranging from $1,524 in Hawaii to $5,521 in Vermont. These variations reflected both fiscal and demographic characteristics of the states and their public schools.

We identified four economic characteristics that were closely related to state tuition levels: in-state students were likely to incur lower tuition charges if, relative to other states, the states in which they lived had low tax rates, high per-student appropriations for higher education, low per-student college expenditures, and low median household income. These four characteristics were associated with 78 percent of the variation in tuition levels among states.

Average Tuition Levels Range Widely Among States

The average tuition levels at public colleges for in-state undergraduate students varied widely among states in school year 1995-96. In four states (Vermont, Pennsylvania, New Hampshire, and Massachusetts) tuition levels were 40 percent or more above the national average tuition of $2,865 for the year, while in Hawaii, North Carolina, and Idaho, tuition levels were 40 percent or more below the national average. (See table 4.1.) However, major increases have been approved for tuition at the University of Hawaii's 10 campuses for school year 1996-97. For example, tuition for full-time, resident undergraduate students at the University of Hawaii's flagship campus in Manoa will increase from $1,534 to $2,832 a year, or 85 percent.

Table 4.1: Average In-State, Full-Time Undergraduate Tuition at 4-Year Public Colleges, School Year 1995-96

State	Average tuition
Vermont	$5,521
Pennsylvania	4,693
New Hampshire	4,537
Massachusetts	4,177
Virginia	3,965
Delaware	3,962
New Jersey	3,848
Connecticut	3,828
Michigan	3,789
New York	3,697
Ohio	3,664
Rhode Island	3,619
Maryland	3,572
Maine	3,562
Illinois	3,388
Oregon	3,241
Minnesota	3,108
South Carolina	3,103
Indiana	3,040
Missouri	3,007
California	2,918
U.S. average	**2,865**
Washington	2,726
Iowa	2,565
Wisconsin	2,555
South Dakota	2,549
Alaska	2,502
Colorado	2,458
Mississippi	2,443
Montana	2,346
Nebraska	2,294
Alabama	2,234
North Dakota	2,211
Kentucky	2,160
Louisiana	2,139
Kansas	2,110
Georgia	2,076
Arkansas	2,062

(continued)

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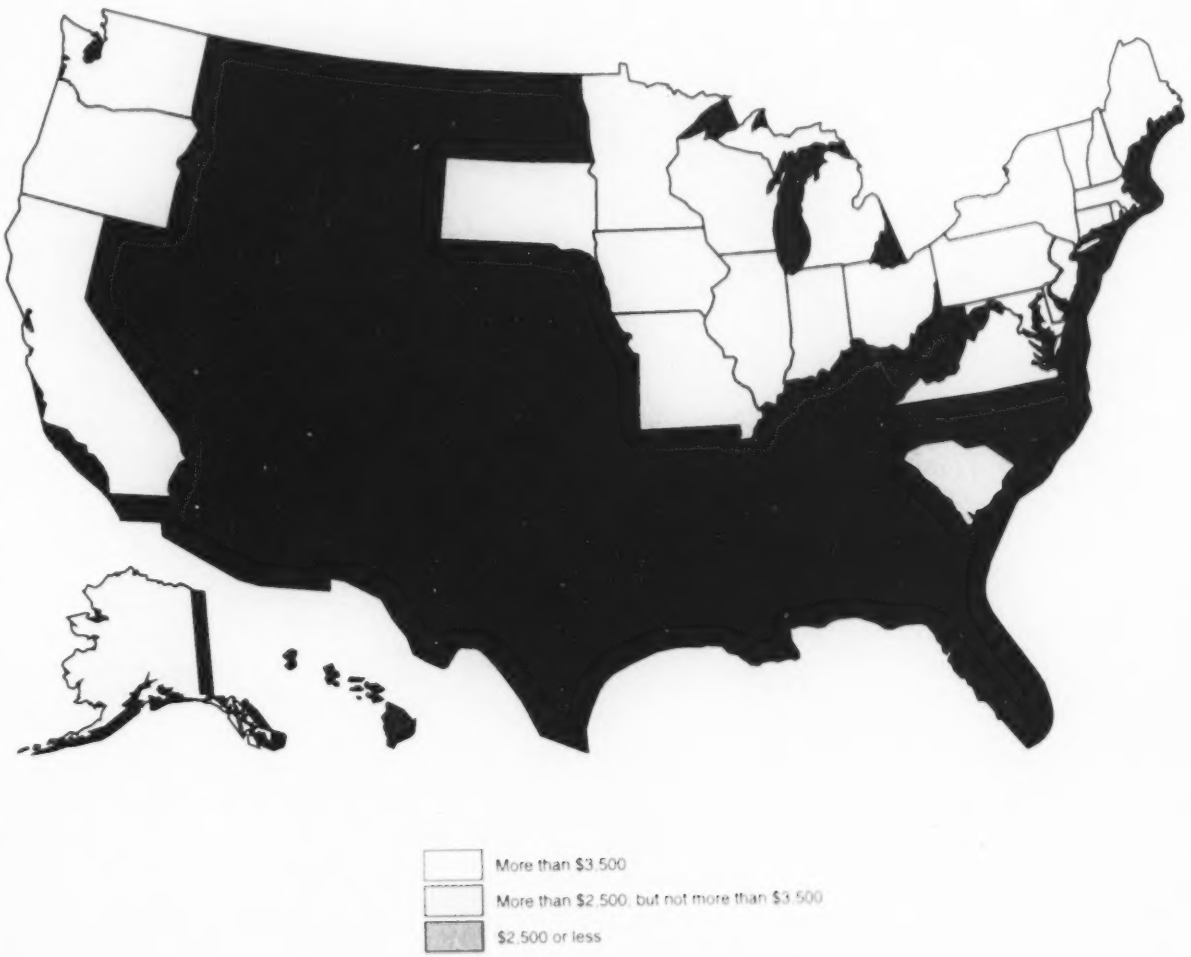
State	Average tuition
Utah	2,007
Wyoming	2,005
Tennessee	2,001
West Virginia	1,992
Arizona	1,943
New Mexico	1,938
Texas	1,832
Nevada	1,830
Florida	1,790
Oklahoma	1,741
Idaho	1,714
North Carolina	1,622
Hawaii	1,524

Note: These figures are weighted by the estimated number of in-state, full-time undergraduates enrolled at each 4-year public school in fall of 1994. We did not validate the data used to calculate these estimates. Data used in our calculations came from either the College Board or the institutions.

Tuition charges tended to vary by geographic region, as illustrated in figure 4.1. For example, most of the states with the highest in-state tuition levels were in the Northeast. In contrast, the 10 states with the lowest tuition were in the southern and western states.

Figure 4.1: Average In-State Undergraduate Tuition at 4-Year Public Colleges by Geographic Region, School Year 1995-96



State Characteristics Closely Correlated to Tuition Differences

We analyzed various characteristics common to states to determine how much each of them helped account for the differences in tuition levels among states. We found that, collectively, four of these characteristics accounted for 78 percent of the state differences in tuition levels. Using

the methodology discussed in appendix II, we found that states tended to have lower tuition if they had

- relatively low state and local taxes as a percentage of the state's tax capacity,
- larger per-student state appropriations to public colleges,
- lower per-student expenditures by public colleges, and
- lower median household income.

Though our analysis shows there is significant correlation between these four characteristics and state tuition levels, these characteristics cannot be said to cause tuition levels to be high or low in any state. However, a discussion of the correlations can provide help in understanding the variations in tuition levels among states.

Most of the other characteristics we considered did not relate as closely to the differences in tuition levels among states as the four listed above. Also, we eliminated from our analysis several state characteristics we judged to be most probably the result of in-state undergraduate tuition levels, even if they were highly correlated—for example, undergraduate tuition for out-of-state students. See appendix II for a detailed description of the correlation between the four characteristics.

High Tuition Often Accompanies High State Taxes

There is a strong correlation between high composite tax rates and high tuition levels.[16] For example, 9 of the 10 states with the highest composite tax rates had tuition levels above the 50-state average, and 9 of the 10 states with the lowest composite tax rates had below-average tuition levels. This might seem counterintuitive at first. But if tuition is considered a "use tax or fee" for attending a state-supported college or university, then it might be expected that this tax or fee tends to be high in states where other taxes are high.

Tuition Levels Are Highly Related to the Level of State Support

The variation in tuition levels among states is also related to differences in the levels of state support for higher education. Tuition tends to be lower in states that provide high levels of per-student financial support to their public colleges. To some degree, the amount of state support, in turn, is a function of the states' tuition philosophies.

[16]The composite tax rate is the weighted average of 27 commonly used state, county, and local tax rates, including tax rates on income, sales, real property, gasoline, tobacco, and alcohol.

On a nationwide basis, state appropriations provided on average about 42 percent of public college revenues, and tuition, about 23 percent, in school year 1993-94 (see table 4.2). However, in the 10 states in which state appropriations provided 50 percent or more of public schools' revenues, the average tuition was about $2,000, or 21 percent below the national average of $2,525 for the year. Conversely, in the eight states in which state appropriations provided 35 percent or less of public colleges' revenues, the average tuition was about $3,500, or about 38 percent above the national average that year.

Table 4.2: Comparison of the Percentage of Public College Revenue From State Appropriations With Revenue From Tuition, School Year 1993-94

State	State appropriations as a percentage of revenue[a]	Tuition as a percentage of revenue[b]	Average full-time resident undergraduate tuition[c]
Vermont	13	44	$5,167
New Hampshire	23	38	3,850
Delaware	26	36	3,620
Colorado	27	26	2,246
Pennsylvania	31	31	4,280
Oregon	34	16	2,844
Washington	35	15	2,329
Virginia	35	20	3,637
Utah	36	12	1,854
Rhode Island	36	32	3,184
Michigan	36	22	3,431
Ohio	37	25	3,259
North Dakota	38	18	2,088
Montana	41	20	1,889
Maryland	41	24	3,100
Minnesota	41	15	2,748
Louisiana	41	18	2,176
Wisconsin	42	17	2,289
New Mexico	42	9	1,721
California	42	15	2,528
U.S. average	**42**	**23**	**2,525**
Indiana	43	21	2,616
Maine	43	24	3,156
Alabama	43	13	1,986
Arizona	43	21	1,817
Missouri	43	22	2,454

(continued)

State	State appropriations as a percentage of revenue[a]	Tuition as a percentage of revenue[b]	Average full-time resident undergraduate tuition[c]
Massachusetts	44	32	4,066
Illinois	44	17	3,027
Iowa	44	12	2,352
Mississippi	45	16	2,355
South Carolina	45	16	2,888
Nevada	45	15	1,503
South Dakota	46	23	2,228
Texas	46	13	1,509
Kansas	47	16	1,856
Connecticut	48	28	3,460
Wyoming	49	13	1,648
West Virginia	49	24	1,855
Oklahoma	49	15	1,640
Kentucky	50	16	1,912
Idaho	50	16	1,503
New York	51	18	2,899
Tennessee	51	14	1,802
New Jersey	51	14	3,087
Nebraska	51	13	1,954
Arkansas	52	14	1,803
Florida	52	14	1,782
North Carolina	52	12	1,405
Georgia	53	15	1,661
Alaska	54	13	1,930
Hawaii	63	8	1,455

[a]These figures represent state appropriations to 4-year state colleges and universities (excluding revenue from grants and contracts received from state governmental sources) as a percentage of current fund revenue, excluding Pell grant receipts from the federal government, auxiliary enterprise, hospital, and independent operation revenue.

[b]These figures are for tuition for out-of-state and graduate students, as well as for in-state undergraduates, as a percentage of current fund revenue, excluding Pell grant receipts from the federal government, auxiliary enterprise, hospital, and independent operation revenue.

[c]These averages are weighted by the estimated number of state-resident, full-time undergraduates enrolled at each state 4-year college in the fall of 1993. We did not verify the data used to calculate these estimates. The source of data used to compute these figures was IPEDS.

Differences in states' tuition subsidy levels relate to a number of factors, one of which involves the states' general philosophies regarding tuition. A 1993 survey of state higher education financial officers on state tuition policies found that a majority of states followed one of several basic philosophies in making decisions about tuition levels, although the states varied in the type of philosophy they followed.[17] For example, eight states subscribe to a "low tuition" philosophy in order to maximize student access to public college. The state constitutions of two of these states, Arizona and Wyoming, specify that university instruction be as nearly free as possible. In contrast, five states reported following a "high tuition" philosophy in the belief that students who have the ability to pay should bear a larger proportion of their education expenditures. Under this policy, some of the tuition revenues are used to provide financial aid to students with lesser financial means to help ensure that the high tuition does not adversely affect access.

Seven states set their tuition at levels comparable to tuition charged by similar institutions (such as a research university comparing itself with another research university rather than a teachers college) or they index their schools' tuition to various economic variables, such as HEPI or personal income levels. For example, South Dakota's policy is to index resident tuition and fees to the prior year's HEPI. Alaska's tuition levels are indexed to the average HEPI over the last 3 years.

The remaining states said they either had a "moderate tuition" philosophy of trying to maintain a proportional sharing of expenditures between the state and student, had no underlying statewide philosophy for setting tuition, or left these decisions up to the individual schools.

Correlation Between Tuition Levels and Schools' Per-Student Expenditures

We found a significant positive correlation between states' average tuition levels and expenditures per enrolled student at public colleges. In other words, the less a state's schools spent per college student, the lower the tuition was likely to be. For example, the seven states with the lowest expenditures per student had tuition below the national average during the 1993-94 school year. (See table 4.3.)

[17] Charles S. Lenth, The Tuition Dilemma—State Policies in Pricing Higher Education (Denver, Colo.: State Higher Education Executive Officers, 1993).

Table 4.3: Estimated Average 1993-94 Public College Education-Related Expenditures Per FTE Student Compared With Average 1993-94 Tuition

State	Education-related expenditure per FTE student[a]	Average 1993-94 in-state tuition	Tuition as a percentage of expenditures
South Dakota	$5,604	$2,228	40
Oklahoma	5,836	1,640	28
Montana	5,942	1,889	32
Louisiana	5,989	2,176	36
West Virginia	6,229	1,855	30
Utah	6,625	1,854	28
Georgia	6,965	1,881	27
New Hampshire	6,991	3,850	55
Idaho	7,035	1,503	21
Arkansas	7,122	1,803	25
North Dakota	7,263	2,088	29
New Mexico	7,404	1,721	23
Nebraska	7,416	1,954	26
Connecticut	7,878	3,480	44
Missouri	7,988	2,454	31
Colorado	8,051	2,246	28
Kentucky	8,109	1,912	24
Wisconsin	8,115	2,289	28
Virginia	8,141	3,637	45
Florida	8,190	1,782	22
Maine	8,226	3,156	38
Mississippi	8,229	2,355	29
Arizona	8,236	1,817	22
Illinois	8,328	3,027	36
Kansas	8,455	1,856	22
Alabama	8,460	1,986	23
Minnesota	8,566	2,748	32
Rhode Island	8,662	3,184	37
Oregon	8,678	2,844	33
Ohio	8,816	3,259	37
U.S. average[b]	**8,892**	**2,525**	**28**
Indiana	8,921	2,616	29
Tennessee	8,940	1,802	20
Nevada	8,955	1,503	17
Michigan	9,052	3,431	38
Massachusetts	9,126	4,066	45

(continued)

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State	Education-related expenditure per FTE student[a]	Average 1993-94 in-state tuition	Tuition as a percentage of expenditures
North Carolina	9,168	1,405	15
South Carolina	9,225	2,888	31
Wyoming	9,234	1,648	18
Texas	9,249	1,509	16
Iowa	9,543	2,352	25
New York	9,671	2,899	30
Maryland	9,778	3,100	32
New Jersey	9,795	3,087	32
Alaska	9,890	1,930	20
Vermont	10,302	5,167	50
Washington	10,303	2,329	23
Pennsylvania	10,749	4,280	40
Delaware	11,876	3,620	30
California	11,965	2,528	21
Hawaii	11,994	1,455	12

[a]These figures include instruction, student services, and a portion of other expenditures, excluding research, public service, and scholarships and fellowships, weighted by the estimated number of fall, full-time, in-state undergraduate students at each 4-year public college.

[b]These figures are averages for 4-year public colleges and universities, weighted by the estimated number of full-time, in-state undergraduate students at each 4-year public college.

However, there were several notable exceptions to this low expenditures/low tuition relationship. Hawaii's public colleges, for example, had the highest expenditures per student but the lowest tuition. Not surprisingly, Hawaii identified itself as a state with a low tuition policy in the 1993 study. The explanation for this anomaly is that Hawaii's unusually high level of state funding support more than compensates for its high expenditures per student and thus enables it to keep tuition rates low.

However, Hawaii's schools may not have the lowest tuition level in school year 1996-97. The state approved an 84.6-percent increase in resident, undergraduate tuition at the University of Hawaii's Manoa campus, which accounts for most of the resident undergraduate students attending a 4-year public college in the state. The increase came after the governor of Hawaii ordered the University to cut $48 million, over 2 years, from its $313 million budget to help cover a state-revenue shortfall.

Although we found a positive correlation between states' tuition levels and the total per-student cost of providing a college education, individual cost components varied in their correlation to tuition. For example, high tuition states typically had higher expenditures for student services, such as admissions, financial aid administration, and counseling. Similarly, high tuition states tended to have higher expenditures per student for certain administrative functions, such as general administrative support, executive direction and planning, legal and fiscal operations, and public relations/development. On the other hand, in states where public colleges spent more per student on research and public service, tuition levels were generally lower.

Level of Household Income Related to Tuition Levels

Public colleges in states with low median household incomes tended to set tuition at a level below the national average. For example, the six states with the lowest median income (Alabama, Arkansas, Kentucky, Mississippi, Tennessee, and West Virginia) all had tuition levels more than 10 percent below the national average in school year 1993-94. States with lower median household incomes may set below-average tuition levels in recognition of their residents' lower average income levels. In fact, the 1993 survey of state higher education financial officers showed that state personal or disposable income is considered by 20 states in setting tuition levels.

States and Schools Take Varying Approaches to Easing the Cost Burden

States and schools are taking a wide range of actions to address the growing burden of paying for college. The actions we identified were of three main types: limiting tuition increases, expediting students' progress toward their degrees, and providing payment alternatives that may lower costs for participants or mitigate students' difficulty in paying those costs. The approaches ranged from long-standing, widely available programs (such as giving students an opportunity to earn college credits while still in high school) to very recent arrangements (such as guaranteeing completion of a degree in 4 years, if students follow certain school-specified conditions).

The arrangements we describe are not intended to be a comprehensive inventory of state and school efforts but, rather, to provide a sense of the range and general flavor of those efforts. Though our focus is on the benefits of programs to students, some of these efforts—particularly those that expedite students' progress toward earning a degree—also benefit schools and the states.

Limiting Tuition Increases

Many of the states and schools we contacted said that they were attempting to keep tuition increases as small as possible through general cost-cutting measures, while some states were taking more definitive steps by setting prescribed limits on tuition levels. We identified two principal approaches that were being applied in setting tuition levels.

No Tuition Increases From the Previous Year

Some states report holding tuition at existing levels, or even reducing it. For example, the Virginia Council of Higher Education, the governing body for Virginia's state-operated colleges and universities, recommended to the state legislature that tuition be held constant in school years 1996-97 and 1997-98. A Council official explained that tuition, rather than additional state support to schools, had borne the brunt of efforts to help schools offset their increasing expenditures from the mid-1980s through school year 1993-94.

The Massachusetts Higher Education Coordinating Council cut school year 1996-97 tuition for state residents by 5 percent at 4-year state colleges. The Committee asked school administrators to make similar reductions in fees set by the institutions. According to a Massachusetts official, the fees are about equal to tuition payments.

Inflation-Related Tuition Increases

Other states and schools are tying their tuition charges to changes in the cost of living. For example, the tuition level at the University of Colorado at Boulder was set specifically to reflect the rate of inflation. For school year 1995-96, this school's tuition for out-of-state students increased by 4.3 percent, which was equal to the increases in the Denver-Boulder CPI. In-state tuition increased even less. Because the Colorado legislature wanted to minimize the effect of inflation on resident students, it increased state funding to hold down the resident tuition increase to 2.3 percent.

The state of Washington shifted from setting tuition based on schools' expenditures to a policy that limits tuition increases to about 4 percent in the 1995-96 and 1996-97 school year budgets, with some variation among schools. The change is intended to hold tuition increases to a rate close to the rate of inflation.

Where schools themselves have tuition-setting authority, states may create inducements for them to limit tuition increases. For example, the Pennsylvania legislature appropriated $24 million in fiscal year 1995-96 for distribution to public colleges that restricted tuition increases to 4.5 percent or less. About $143 per full-time resident student was allocated for schools that complied.

Michigan enacted a different type of incentive, providing for a credit equal to 4 percent of tuition, up to $250, to be deducted from the state income tax liability of residents paying tuition at state schools whose tuition increases do not exceed the change in CPI. Before this legislative revision, Michigan State University approved a policy guaranteeing that tuition increases would not exceed inflation for the 4 years required to complete a baccalaureate degree for freshmen classes entering the school in school years 1995-96 and 1996-97. The guarantee is contingent on state appropriations for the school's general fund keeping pace with inflation.

Lowering Total Costs for College by Speeding Academic Progress

Some actions and programs can lower students' costs without directly addressing the issue of rising tuition. We identified a variety of state and school initiatives to help expedite students' progress toward their degrees. These actions, according to experts, can result in substantial savings for students, schools, and states by reducing both college costs and the length of time students forgo earnings. State and national data show that many students take longer than 4 years to complete their degrees. For example, a 1994 University of Illinois study found that about half the degree

recipients at Illinois who entered as freshmen needed more than 4 years to finish. And, according to a 1995 State University of New York (SUNY) report, 60 percent of the university's students, and 45 percent of students nationally, receive their bachelors degrees within 6 years.

We found similar results analyzing Department of Education national data on the proportion of seniors who did not graduate during their fourth year. At public 4-year institutions in 1992-93, fewer than half the full-time, fourth-year students finished their baccalaureate degrees by the end of their senior year.[18] Although many students may take longer for reasons of their own choosing (such as taking less than a full load of course work), actions to help students move through a degree program as expeditiously as possible may eliminate some of the institutional obstacles to reducing students' costs.

We identified various strategies states and schools were using to help students move more quickly through their undergraduate work: limiting degree requirements or program length, working with high school students to guide them in taking the right preparatory courses, letting high school students earn college credit through accelerated courses and other means, facilitating the transfer of courses taken at community colleges, and improving academic advising. Although some of these efforts have been in place for a number of years, none of the studies we reviewed determined the effectiveness of the programs in shortening the time students take or reducing the cost they incur to obtain their undergraduate degrees.

Limiting Degree Requirements or Program Length

Reducing the amount of time required for students to complete a college degree by limiting the number of required credits is one way schools are lowering their students' costs. Eight of the 21 states responding to our call for information through the State Higher Education Executive Officers' electronic network said they had made an effort to limit the number of credits students needed to complete their degree requirements. And we identified efforts by other states to reduce maximum degree requirements. Arizona's three state universities, for example, are reducing the required number of hours in 261 undergraduate degree programs from 125 or 126 (and as many as 144) to 120, effective December 1996. A Board of Regents official said this change is designed to make it easier for students to complete a degree in 4 years. Eighty-five percent of the three universities' undergraduates were in these programs in school year 1995-96.

[18]Our national calculations are based on Department data that do not indicate whether students who were full time at 4-year public colleges during the fall term of the year they graduated attended on a full-time basis throughout their years in college.

Another effort to reduce the time needed to obtain a degree takes the form of schools' programs to provide 3- and 4-year degree programs. We identified several programs that guarantee students can complete their requirements for a baccalaureate degree in 4 years—and, in some cases, in less time. One such 4-year degree completion program, at the University of Iowa, is described below. A University of Iowa publication advises that resident students can save $9,518 by graduating in 4 years instead 5 years, which is closer to the current average.

An additional value of these programs is derived from the message they can convey to parents and school staff about the importance of timely degree completion. For example, a Colorado official told us an important benefit of the 4-year program at the University of Colorado Boulder campus is that it notifies parents of the feasibility of completing the degree in 4 years and puts departments on notice that they must ensure course availability.

University of Iowa's 4-Year Graduation Plan: Established in 1995, the University of Iowa's 4-Year Graduation Plan is available to students in all except a small proportion of its programs. Among its requirements are that the student begin at the university as a freshman, choose and be adequately prepared for a qualified major at entry (or at specified later times for certain majors), complete the necessary number of courses each year, and not change majors in a way that will undermine completion in 4 years. In return, the university agrees to help students graduate in 4 years by waiving or making substitutions for any unavailable required courses or by paying for students to take unavailable courses later. Students meet with their adviser every semester to review their 4-year plan, ensure they are still on track, and incorporate any changes that are appropriate.

When first offered in the 1995-96 school year, the program enrolled about 50 percent of the fall 1995 entering freshmen. Because all participants are still freshmen, it will take 4 years to determine the program's success in shortening time to graduation.

We found a few instances in which states' schools are offering even shorter degree programs or permitting students to pursue advanced degrees as undergraduates. One of these programs, at SUNY Brockport, is described below.

SUNY Brockport's 3-Year Delta Program: The Delta College Program at SUNY Brockport provides two academic options for students to complete a baccalaureate degree with a total of 99 credits in six semesters (program duration may be prolonged by requirements for certain majors or by courses required to gain the language, statistics, or computer competencies). The shorter completion time is achieved in part by "deleting duplication of content from advanced secondary courses and in part by students having the necessary prerequisites to complete the program in six semesters." All students must complete (1) a common 42-credit core studies curriculum,(2) 36 hours in a major or global studies curriculum, and (3) 21 credits of experiential integrative learning experiences. The integrative learning credits, which include a 15-week international experience, are achieved off campus, partly in summer, and may be for pay. Students may meet required language, statistics, and computer competency requirements either through courses or examinations.

The program, started in this form in 1995, has a first-year enrollment of 199 students, of whom 32 are freshmen. Officials expect the freshman enrollment to double in the second year.

At other schools, students may be able to complete a degree in less than 4 years by squeezing 4 years of course work into a shorter time. Students may shorten the time to obtain their degrees by taking a heavier course load, passing proficiency tests, attending summer school, applying college credits achieved before starting their college education, or some combination of these.

Emphasis on shortened degree programs has met with some skepticism in the academic community. For example, the Virginia Council on Higher Education's 1993 report, The Continuum of Education, contains a comprehensive discussion of how students move through the Virginia educational system and questions the applicability of formal 3-year degree programs in the U.S. educational setting. The report maintains that the usual senior year in American high schools is not a rigorous academic experience and concludes that students may not have adequate preparation to complete college in 3 years or even 4 years unless they take advantage of options for achieving college credits during their senior year. However, those who take advantage of such options can complete most 120-hour degree programs in 3 years.

Helping Entering Students Avoid Having to Take Remedial Courses

Responding to concerns about students' inadequate preparation for college, some schools have implemented programs to minimize the number of remedial classes students take at 4-year schools. In Oregon, for example, nearly 40 percent of all first-time freshmen at state schools require remedial education in mathematics. Students pay for courses such as these but usually do not receive college credit for them. In aggregate, students attending Oregon schools spend an estimated $300,000 annually for remedial education in mathematics, and $125,000 for remedial writing courses.

Some states or institutions have developed programs to give high school students a clearer idea of courses they need to take while in high school to better prepare themselves for college-level work and to allow them to appropriately adjust their high school curriculum. An example of a program that has been operating for some time is Ohio's Early College Mathematics Placement Testing Program. According to an Ohio official, five states now have similar programs in place.

Ohio's Early College Mathematics Placement Testing Program: Based on the premise that if high school juniors were aware of the negative consequences of needing remedial math in college, they would schedule appropriate courses in their high school senior year, Ohio's Early College Mathematics Placement Testing Program was designed to provide feedback to high school juniors. As of 1994, the program included 42 colleges and universities, including all 13 state-supported universities as well as 2-year and private schools. The program, which began in 1978, is administered by Ohio State University. The program provides optional testing to college-bound high school juniors and provides them information on which to base senior-year scheduling in preparation for their intended college majors. As of 1994, about 75 percent of Ohio high schools participated in the program.

From the start, the program was followed by a dramatic increase in the number of high school seniors enrolling in mathematics, and by improvement in the college mathematics placement test scores of students entering Ohio State University. The university reported, for example, that remedial mathematics placements were down 50 percent (from a high of 43 percent of students). Moreover, a 1994 report cited strong evidence that students from high schools participating in the program for several years needed fewer remedial courses than would otherwise have been expected. The report suggested that the program is positively affecting the quality of

instruction at participating high schools. Ohio has since developed a similar program for assessing English composition.

Providing College Credit Through Acceleration Programs

Programs at some high schools, community colleges, and 4-year schools provide qualified high school students college credits, which can accelerate students' progress to a baccalaureate degree. Acceleration programs include such approaches as advanced placement (AP), dual enrollment options and early admissions, the International Baccalaureate (IB) Program, and achieving college credits through the College-Level Examination Program. Table 5.1 describes these programs.

Table 5.1: Programs Providing Accelerated College Credit

Program	Description	Example or scope
Advanced placement	Students participate in one or more of 29 specific courses developed under College Board sponsorship. On the basis of their scores on standardized AP tests, students may receive college credit, advanced placement, or both. AP programs are taught at the high schools by high school faculty. Students pay only AP examination fees, considerably less than the cost per course of college tuition and fees. Under certain circumstances, some states—Colorado, for example—absorb examination fees.	The South Dakota Board of Regents produces a booklet called "Acceptance of Advanced Placement Examinations," which specifies which AP examinations are accepted at each state school, what AP score is required, and to which college courses the credits apply. A state of Washington official said roughly 4.5 percent of Washington high school students participate in the AP curriculum, most often in mathematics, English, biology, or chemistry.
Dual enrollment	Under agreements with participating colleges and universities, qualified high school students are eligible to take college-level courses, for which they receive both college credit and credit toward high school graduation. The courses may be taught at a community or 4-year school, or at high school, by high school or college faculty. Arrangements for paying the costs range from absorption of all normal tuition costs by the school district, to students' paying for books, supplies, and/or transportation, to students' paying all costs. Under an early admission program, a variant of dual enrollment, students attend a postsecondary institution full or part time during the last 1 or 2 years of high school and receive both high school and college credit.	Under Washington State's Running Start Program, students in grades 11 and 12 attend college courses at any of 32 community and technical colleges, or at any of three state universities in cities without a community or technical college main campus. Because tuition costs are paid with basic education funds for grades kindergarten through 12, students are able to attend tuition free, though they are responsible for transportation and books. The program began with a pilot in school years 1990-91 and 1991-92 and had more than 7,400 participants—about 3 percent of all high school juniors and seniors in public high schools—by 1994-95. In 1994-95, the program saved students and their families $5 million in tuition costs.
International Baccalaureate Program	As is the case with advanced placement, this program is taught at high schools by high school faculty, using school district funding. It is an integrated program of studies, comparable to a comprehensive advanced placement curriculum, with additional requirements for research and social service. The IB Program is offered by one or more high schools in 32 states and the District of Columbia. In most states, at least one public college recognizes the program, though schools differ in their criteria for providing credit. In some states, legislatures provide supplementary funding to high schools that offer the program.	The University of North Carolina's Charlotte campus offers up to a year's credit to IB students. Four of Charlotte-Mecklenburg's 11 public high schools offer the program, and IB preparatory programs exist in 4 middle schools and 2 elementary schools. In Florida, state regulations require public colleges and universities to award up to a year's credit for IB course completion—depending on the level of test passed and the score achieved—and the law provides scholarships for students with IB diplomas. In addition, the law provides for increasing high schools' full-time-equivalent count for funding purposes by a factor that reflects IB students' course completion.
College-Level Examination Program	Students may qualify for postsecondary credit by demonstrating college-level achievement on nationally standardized tests given monthly around the country by the College Board. No structured curriculum exists for the Program. Schools vary as to the subjects for which they award credit, their cut-off scores, how much credit they award, and additional requirements they impose.	Schools accepting credits include schools in all 50 states, the District of Columbia, Guam, Puerto Rico, the Virgin Islands, and Canada. Participating schools range from community colleges to ivy league schools.

Though such programs are widely available, colleges and universities vary in their acceptance of the credits that students earn. According to the College Board, for example, about 50 percent of colleges and universities offer sophomore standing for students with qualifying grades on advanced placement examinations. But the schools use different formulas for translating those credits to college credits. Similarly, schools differ in their acceptance of dual enrollment and IB Program credits.

There have been a number of variations of these programs. One that involves a fundamental change is the proposed system, currently under development, for admitting students to Oregon's state colleges and universities on the basis of demonstrated proficiencies.

Oregon's Proficiency-Based Admissions Standard System (PASS): Oregon's PASS is a new system of college admission that substitutes proficiency requirements for traditional time-based proxies for learning, such as the number of courses completed with a passing grade. Among reasons given for the change are lack of uniformity in preparation students receive in high school even when they take the same courses, and the large proportion of college students requiring remedial courses in college. PASS requires that students demonstrate specific levels of knowledge and skill in six major content areas (such as mathematics, science, and the humanities) and nine processes (reading, writing, communication competence, critical/analytic thinking, problem solving, technology as a learning tool, teamwork, systems/integrative thinking, and quality work). Assessment tools include tests, tasks such as research papers and speeches, and teacher verification of proficiency through documented scoring and common criteria. PASS is scheduled for implementation in 2001.

Oregon teachers piloted PASS proficiencies and integrated the PASS assessment standards with existing high school performance standards in school year 1995-96. When PASS is fully implemented in 2001, the Oregon State System of Higher Education expects to significantly curtail remedial programs and introductory level courses, and to create opportunities for students to move more quickly to graduation.

Facilitating the Transfer of Community College Students to 4-Year Schools

Community colleges have been designed, in part, to provide affordable educational access both through their relatively low tuition costs and their location within commuting distance. But when students transfer from

community colleges to 4-year schools, their academic progress may be slowed because their credits do not always fully satisfy the 4-year schools' requirements. Sometimes this means that students must take courses that are similar to ones they have already completed. For example, a transfer student's completed courses may give too few credits or may lack a laboratory component required to meet the receiving school's requirements. To the extent that states are successful in facilitating transfer of credits, students will be able to achieve an increased portion of their requirements in lower-cost settings.

Many states and schools reported that they were working to improve the transfer of community college credits to 4-year schools. Examples of steps taken to improve the transfer of credits included agreements between colleges and community colleges as well as better coordination between colleges and high schools on high school curricula. Other initiatives to facilitate credit transfer include written or computerized transfer guides to inform students regarding course equivalencies and common course numbering systems. These steps are part of a comprehensive approach to expediting students' degree completion included in a Florida statute, as described below.

Florida's Provisions to Facilitate Transfer of Credits. Florida law requires that the state's postsecondary institutions use a common course designation and numbering system for community colleges and state universities and colleges, and common course prerequisites and substitutions except for unique program prerequisites approved by the Board of Regents. Further, postsecondary institutions are required to work with school districts to coordinate high school curricula with college core courses to prepare high school students for college-level work.

The Florida law also calls for state colleges and universities (with the exception of specified programs) to give upper-division status to any Florida student with an associate in arts degree or with 60 completed community college credits that include 36 general education credits. For most degree programs, at least half of the required credits must be achievable through courses designated as lower-division courses offered by Florida community colleges. Colleges, universities, and community colleges must also enable students to earn general education course credits through nationally standardized or institutionally developed examinations. In addition, the law calls for developing a single, statewide computer-assisted student advising system, accessible by state 4-and

2-year postsecondary school students as an integral part of the process of advising and registering students and certifying them for graduation.

Many of these provisions were contained in a 1995 amendment and are targeted for completion by the fall semester of 1996. An official said that, for the most part, efforts are on track to meet targeted dates.

Improving Academic Advising

To avoid delays in students' completing degree requirements, it is important that they have the information they need to select a major and to efficiently schedule course work. Good academic advising can help students by providing guidance in selecting a major and properly sequencing courses and by making students aware of necessary but infrequently offered courses or of courses that tend to be difficult to schedule. A 1992 study of student progress by the Virginia Polytechnic Institute found that students' most common recommendation for shortening the time needed to graduate was to improve advising; one-third of students who were delayed in completing their degree programs attributed the delay to some extent to the advice they received. Similarly, an Illinois Board of Higher Education report attributed students' delayed degree completion to a lack of guidance and information on how to achieve their educational goals. University officials in two other states commented that bottlenecks to degree completion often reflect improper course sequencing or student unawareness that certain courses are not always available.

To strengthen their academic advising activities, some states are developing computerized systems that provide students and/or advisers a list of unmet degree requirements for each student. According to a University of Colorado official, the school plans to make its computerized transcript system, now accessible only to advisers, accessible to students. The eventual plan is to develop software that will calculate a student's remaining course work needs in response to "what if?" scenarios that users enter into the computer.

Alternative Ways of Helping Students to Pay

Alternative payment and savings plans, for those who choose to participate, offer several different approaches to easing the burden of paying for college. These arrangements do not focus on lowering tuition costs; rather, they are intended to offer parents alternative ways of paying these costs, such as spreading them out over a longer time frame. However, these arrangements pose risks to states and families that

participate. In a prepaid tuition program, for example, the state or school may be responsible for the difference between amounts families paid into the plan and actual tuition costs. Also, these plans' benefits typically accrue principally to middle- and upper-income families, which have more discretionary income to use in such ways, and provide little assistance to students from low-income families.[19] Three principal types of currently available alternative payment programs came to our attention—tuition prepayment programs, college savings plans, and monthly payment plans.

Tuition Prepayment Programs

The three main kinds of tuition prepayment plans—contract, tuition credit, and certificate—have some characteristics in common. Table 5.2 describes examples of each. In all three, the purchaser pays in advance for educational benefits that a designated beneficiary will use in the future. The program charges roughly the current cost of the tuition and of other educational benefits. Purchasers pay either in a lump sum or in a series of payments.

Table 5.2: Major Types of Tuition Prepayment Plans

Type of plan	Selected state using plan type	Description
Contract	Florida	The purchaser contracts for a predetermined amount of education, with the cost calculated based on current tuition levels. As of January 1995, 327,707 contracts had been purchased through the program, but approximately 14 percent had been cancelled. In September 1994, over 12,000 students were attending community colleges and 4-year schools and paying at least part of their school expenses using prepaid tuition.
Tuition credit	Pennsylvania	The purchaser starts an account into which he or she makes deposits for prepaid units of education. Between 1993, when the program began, and December 1995, nearly 14,300 accounts were opened with a total value of about $45.4 million. Because participants must be in the program for at least 4 years, the earliest that credits can be used is September 1997.
Certificate	Massachusetts	Participants purchase certificates from the state redeemable for a percentage of a school's tuition and mandatory fees. However, the state commits to pay only the face value of the certificate plus interest compounded annually at a rate equal to 2 percent above the increase in CPI. The schools absorb the loss if their costs rise more than the value of the certificates. The program began in 1995.

Some states are reluctant to risk the possibility that income from investing the premiums that participants pay into these plans will not keep pace with the rising cost of education. We identified two state programs (Michigan and Wyoming) that have experienced the effects of this risk. In Michigan, according to state officials, the original program was suspended

[19]See College Savings: Information on State Tuition Prepayment Programs (GAO/HEHS-95-131, Aug. 3, 1995).

because it proved actuarially unsound. A major concern was uncertainty surrounding federal tax liability, on which a court has since ruled in the state's favor. After being suspended for a period, the program was reinstated in response to the public's interest. However, the new program is priced considerably higher and, unlike the earlier program, subject to liquidation if it becomes actuarially unsound.

Wyoming operates a contract-type program that is also experiencing actuarial difficulties. When participants begin to redeem their $5,000 unit contracts next year, the accounts' principal plus accumulated interest will fall considerably short of covering the cost of tuition, according to a University of Wyoming official. The state, in paying the difference, will subsidize these contracts.

College Savings Plans

Among other available savings options, some states have developed tax-advantaged debt instruments they identify as college savings bonds. These bonds are generally zero-coupon bonds, sold at a discount, with the difference between face value and purchase price representing interest. Interest on the bonds is exempt from federal taxes and, for purchasers who reside in the issuing state, from state taxes. Many states see these bond programs as less financially risky and easier to administer than prepaid tuition programs. Unlike prepaid tuition programs, state savings bond programs do not require that the funds be spent on college expenses. Illinois, however, pays a bonus on redemption if the funds are spent at an institution of higher education.

Other states have programs that enable participants to save money in special college savings accounts. Kentucky, for example, has a Savings Plan Trust that is administered by the Kentucky Higher Education Assistance Authority. Earnings depend on investments the Trust's fund manager selects and the timing of the investment and have a guaranteed minimum interest rate of 4 percent. Students who use the proceeds of their Trust investments to attend Kentucky schools receive an additional boost: Kentucky allows the savings in the Trust to be excluded from the schools' calculation of state student aid eligibility.

Monthly Payment Plans

Most schools require tuition payments, including room and board, to be paid either before or at the time students enroll in school. Some states have arrangements for students and their families to spread out their college payments over the enrollment period rather than paying them at

the beginning of each semester or quarter. In Connecticut, for example, a state official said that most 4-year schools have programs allowing students to spread their payments over the year. Eastern Washington University, according to a school official, contracts with an outside vendor to collect payments over 12 months. Although the vendor does not charge interest for this service, it does charge a small fee.

Conclusions

A public college education has become less affordable in the last 15 years as tuition has risen nearly three times as fast as household income. As a result, the portion of a household's income needed to pay for college tuition nearly doubled during the period. The rapid rise in tuition reflects two key trends over the last 15 years: public colleges' expenditures per student rose over 120 percent and the portion of those costs paid for by tuition rose from 16 to 23 percent. Students and their families have responded to this "affordability gap" by drawing more heavily on their own financial resources and greatly increasing their borrowing.

On a more positive note, public college tuition is still a "bargain" in that it pays less than a quarter of the costs colleges incur and, at an average of $2,865 in 1995-96, it is only a fraction of the $20,000-a-year tuition charged by some private colleges. Also, although federal grant aid has been stagnant in real terms, the Congress has increased the borrowing limits and expanded the eligibility for federally guaranteed student and parental loans. In addition, many states have made efforts to freeze or hold down the rate of increase in tuition levels, created college savings and prepayment programs, or undertaken initiatives to expedite students' completion of the college degree requirements.

College could become more affordable in the future if (1) colleges' expenditures per student declined or grew at a slower rate, (2) a smaller portion of colleges' expenditures were paid for by tuition, (3) household incomes increased at a faster rate than that for tuition charges, or (4) grants became a larger portion of federal student aid. However, if none of these changes occur, rising tuition levels may deter many students from attending college. For those that do attend, the debt loads many students and their families assume may increasingly affect students' career decisions, their parents' life styles while their children attend college, and students' life styles after they complete college.

Objectives, Scope, and Methodology

Our objectives were to address the following questions:

- How much have average undergraduate resident tuition levels at public colleges increased compared with students' and their families' ability to pay for college, as measured by such yardsticks as median family income and CPI, and what are the principal reasons for the increases in tuition?
- To what extent have increases in college expenditures for instruction, administration, research, and other educational elements contributed to the schools' cost increases since 1980, and why have these expenditures increased?
- To what extent does average undergraduate resident tuition at public colleges differ among states, and what factors or characteristics (such as state tax levels and median household income) are associated with the differences among states?
- How do the costs of providing an education at public colleges differ among states, and to what degree are these costs related to the average level of tuition charged in each state?
- What are some examples of measures taken by states, colleges, and universities to contain increases in tuition at public colleges or otherwise help make paying for college less burdensome?

Scope and Limitations

We focused our study on public colleges, which enroll more students than other kinds of higher education institutions (that is, private and proprietary—for profit—schools). Our analysis generally focused on the period spanning school years 1980-81 through 1993-94. However, we were able to obtain tuition data for school year 1995-96, and some data were available through the 1994-95 school year.

In our analysis of students' costs, we focused on tuition, which included related fees. We excluded certain other costs, which can be substantial, that students incur while attending college, such as room and board, books and supplies, and transportation. Data on these kinds of costs were not consistently included in the readily available databases we used in our analysis. We also excluded the opportunity costs of attending college—the income students could have otherwise earned had they not attended college. The literature we reviewed provided no empirical analysis of this issue but rather addressed it mainly in theoretical terms. While foregone earnings may be substantial for some students, the lack of empirical data did not permit us to conduct an analysis of these opportunity costs.

Where possible, we focused on costs related to enrolled undergraduate students. However, the database we used to determine the expenditures incurred by colleges, the Department of Education's IPEDS, did not contain sufficient data to permit us to distinguish costs for undergraduates from costs for other students, such as graduate and professional students. Because the information on colleges' expenditures covers graduate as well as undergraduate students, our cost data may overstate actual expenditures incurred by public colleges in educating undergraduates. In addition, we did not attempt to determine the extent to which scholarships and fellowships supported teaching assistants, or to identify the portion of college expenditures that are federal or state pass-through funds. We did not verify the accuracy of the data used in our analyses.

Methodology

To compare trends in tuition and indicators such as median household income and inflation, we gathered historical data from IPEDS, the Bureau of Labor Statistics, the Census Bureau, and Research Associates of Washington. Where possible, we used data for school years, which typically begin July 1 each year. In some cases, however, data were not readily available for school years. In the case of federal student loan data, for example, we used federal fiscal year data. Median household income data were available for calendar years.

In estimating the states' average public college cost of providing education to their resident students, we were limited to the use of IPEDS data. Because these data are not sufficient to identify expenditures separately for undergraduates and graduate or professional students, the results of our analysis represent estimates of the cost per enrolled student of providing education. We included some IPEDS expenditures entirely; prorated others, based on the extent of their application to instruction or student services; and excluded still others. We calculated expenditures in each category per estimated FTE student for each public college and university. To determine the average state cost, we weighted the data using the estimated number of in-state, full-time undergraduate students. By using this protocol, we tried to avoid overrepresenting entities such as medical schools, which have few full-time undergraduates but many graduate students.

The extent to which we included different cost elements in our analyses was judgmental, based in part on the degree that these elements were used to provide instruction and support services to students rather than, for example, research or community services. Accordingly, we included

instruction and student services in their entirety and prorated academic support, institutional support, plant operation and maintenance, and fund transfers. We excluded auxiliary enterprise, hospital, and independent operation expenses because these expenditures are not directly related to educating students and generally have offsetting revenues. We also excluded federal Pell grants and other scholarships and fellowships provided directly to students because these help offset students' costs without significantly adding to the schools' costs of providing education.

To determine nationwide trends in tuition, we performed statistical analyses using data from the IPEDS surveys. Our analysis focused on data for academic years 1980-81 through 1994-95, the latest year for which such data were available. In order to provide more up-to-date information, we supplemented IPEDS data with tuition data compiled by the College Board for the 1995-96 academic year. To obtain tuition figures for colleges and universities not included in the College Board data or to resolve apparent inconsistencies, we contacted school officials. To determine how tuition trends compared with changes in consumer prices and in peoples' ability to pay, we used Census Bureau median household income and Bureau of Labor Statistics CPI data as comparison indices. To identify reasons why changes in tuition have differed from changes in the various economic indicators, we reviewed research studies and other information pertaining to college affordability and interviewed officials of higher education associations and others knowledgeable about higher education finance issues.

To determine the extent to which tuition levels varied among the states, we conducted state-by-state comparisons of the average undergraduate resident tuition levels using IPEDS and College Board data. In calculating state average tuition levels, we weighted each school's undergraduate tuition charges by the number of its full-time resident undergraduate students. Our selection of factors to test for association with variations in tuition levels among states was derived from a review of research studies and other relevant literature. In addition, we identified state characteristics that were statistically associated with relatively high tuition rates and with relatively low tuition rates, analyzing the correlation of weighted tuition rates with state characteristics, such as schools' expenditures per student, state appropriations for higher education, and state funding of student financial aid.

To identify examples of state and/or school measures to make paying for college less of a financial burden, we searched the literature and

interviewed state and school officials. We also contacted representatives of several higher education trade associations, such as the American Council on Education, the American Association of State Colleges and Universities, the College Board, and American College Testing, as well as individuals with published research or papers on the topic. We supplemented this information with material gathered on our behalf by the State Higher Education Executive Officers Association (SHEEO) from its members regarding their practices and programs to make college more affordable or payment less difficult. Where readily available, we obtained data on levels of participation in these programs. We also attempted to obtain information on program effectiveness, both in our discussions with state and school officials and in our request for information through SHEEO's network.

Analysis of Statistical Relationships Between States' Average Tuition and Various State Characteristics

To learn more about differences among states' average tuition charges, we conducted statistical analyses of states' average tuition in relation to various state characteristics. This analysis identified four variables that together are associated with about 78 percent of the variation among states' average tuition levels:

- State and local tax rates. We used a measure of each state's "tax effort" developed by the U.S. Advisory Commission on Intergovernmental Relations. The commission calculated national average tax rates for 27 commonly used taxes assessed by state, county, and local governments, including taxes on income, retail sales, property, estate, gifts, and licenses. Using these figures, the commission calculated an index showing how high each state's tax rates were compared with the national average tax rates. This composite tax effort index, expressed as a percentage of the national average, is equal to the total state and local tax revenue for fiscal year 1994 divided by the amount of state and local tax revenue the state and localities in the state would have received if they had adopted tax rates equal to national average state and local tax rates. We used tax effort estimates for 1994 obtained from Research Associates of Washington.[20]
- Public college revenue per student from state appropriations. This figure is the estimated average state appropriation received by public colleges during the 1993-94 school year, per FTE student. These figures were weighted by the estimated number of full-time, in-state undergraduate students at each state college and university in the state. The data used for this calculation were obtained from the IPEDS 1993 fall enrollment and school year 1993-94 finance surveys.
- Estimated state average education-related general and current expenditures per FTE student for school year 1993-94. These estimates included expenditures for instruction; student services; and a prorated portion of other expenditures, including academic support, institutional support, plant operation, and maintenance. These averages do not include research, public service, or scholarships and fellowships. We calculated these estimates using data from IPEDS' 1993-94 finance and fall 1993 enrollment surveys.
- Median 1994 household income in the state. These figures come from the U.S. Bureau of the Census's Current Population Reports.

As discussed in appendix I, our dependent variable was the average in-state (that is, state resident), full-time undergraduate tuition for an academic year at public colleges and universities. We computed these

[20] Kent Halstead, State Profiles: Financing Public Higher Education 1978 to 1995 (Washington, D.C.: Research Associates of Washington, 1995). The Commission's methodology is described in its 1993 publication RTS 1991: State Revenue Capacity and Effort.

averages using tuition data obtained from the College Board or, in some cases, the institutions themselves. We obtained fall enrollment data from the IPEDS 1994 fall enrollment survey.

Each of the four independent variables was highly correlated with state average tuition. The state and local tax rate, public college expenditures per FTE student, and median household income were positively correlated. States with higher tax rates, public college expenditures, and/or median household income were more likely to have higher average tuition. One of the three variables—state appropriations per FTE student—was negatively correlated with tuition. States that provided higher appropriations per FTE student at state colleges and universities were more apt to have lower average tuition. The Spearman correlation coefficients[21] and the related 1-tailed probability statistics are shown in table II.1.

Table II.1: Correlation Statistics Between Independent Variables and Average State Tuition

Independent variable	Spearman correlation coefficient	Probability that this correlation was the result of random factors
State and local tax rates	0.486	Less than 0.001
State appropriations per FTE student	-0.481	Less than 0.001
Education-related expenditure per FTE student	0.343	0.007
Median household income	0.363	0.005

Using a step-wise linear multiple regression analysis of these data, we found that together the four variables accounted for (that is, were statistically associated with) 78 percent of the variation among states' average tuition at state colleges and universities. Table II.2 shows the extent to which the addition of each variable into the analysis increased the predictive power of the variables:

1. The measure of state and local tax rates was statistically associated with 23.67 percent of the variation among states' average tuition (as indicated by R^2 in the table's third column).

2. State appropriations per FTE student accounted for another 21.94 percent of the variation.

3. Education-related expenditures by public colleges accounted for 29.03 percent.

[21]The Spearman correlation coefficient is a commonly used measure of correlation between two ordinal variables.

4. Median household income accounted for 3.66 percent.

In total, these four variables accounted for 78.06 percent of the variation, with a residual (unaccounted for) variation of 21.94 percent.

This statistical accounting of the variation among states' average tuition does not mean that these factors cause or set tuition levels. Ultimately, college, university, and/or state policymakers set tuition levels. However, as the table shows, these four variables provide a statistical prediction covering about 78 percent of the variation in tuition.

Table II.2: Results of Step-Wise Multiple Linear Regression Analysis of Average State Tuition in Relation to Selected State Variables

Step	Independent variable	Multiple R^2[a]	Change in multiple R^2	Probability of the F statistic[b]
1	State and local tax rates	0.2367	0.2367	Less than 0.001
2	State appropriations per FTE student	0.4561	0.2194	Less than 0.001
3	Education-related expenditure per FTE student	0.7463	0.2903	Less than 0.001
4	Median household income	0.7829	0.0366	0.008

[a]This is the coefficient of determination, a statistic that indicates how well a linear statistical model fits the data. If there is no linear relationship between dependent and independent variables, R^2 equals 0; if there is a perfect statistical relationship, R^2 equals 1.

[b]This indicates, for the addition of each variable in the model, the probability that the statistical relationship between the variable and the variation in average tuition not accounted for by preceding variables is due to random factors.

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